

***FlyBy Math™* Alignment**
Kansas Curricular Standards for Mathematics
Jan 31, 2004

Standard 2: Algebra

Algebra – The student uses algebraic concepts and procedures in a variety of situations.

Benchmark 1: Patterns – The student recognizes, describes, extends, develops, and explains relationships in patterns in a variety of situations.

<i>Fifth Grade Knowledge Base Indicators</i> The student...	<i>FlyBy Math™</i> Activities
2. uses these attributes to generate patterns: d. measurements (2.4.K1a)	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.
3. identifies, states, and continues a pattern presented in various formats including numeric (list or table), visual (picture, table, or graph), verbal (oral description), kinesthetic (action), and written (2.4.K1a)	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.
4. generates: b. a pattern using a function table (input/output machines, T-tables) (2.4.K1g)	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.
<i>Fifth Grade Application Indicators</i> The student...	<i>FlyBy Math™</i> Activities
1. generalizes these patterns using a written description: c. measurement patterns (2.4.A1a)	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

Benchmark 3: Functions – The student recognizes, describes, and examines whole number relationships in a variety of situations.

<i>Fifth Grade Knowledge Base Indicators</i> The student...	<i>FlyBy Math™</i> Activities
4. uses a function table (input/output machine, T-table) to identify, plot, and label whole number ordered pairs in the first quadrant of a coordinate plane (2.4.K1a,f).	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system. --Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

<p><i>Fifth Grade Application Indicators</i> The student...</p> <p>3. translates between verbal, numerical, and graphical representations including the use of concrete objects to describe mathematical relationships (2.4.A1a,k)</p>	<p><i>FlyBy Math™ Activities</i></p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p>
<p><i>Benchmark 4: Models – The student develops and uses mathematical models including the use of concrete objects to represent and explain mathematical relationships in a variety of situations.</i></p>	
<p><i>Fifth Grade Knowledge Base Indicators</i> The student...</p> <p>1. knows, explains, and uses mathematical models to represent mathematical concepts, procedures, and relationships. Mathematical models include:</p> <p>a. process models (concrete objects, pictures, diagrams, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate planes/grids) to model computational procedures and mathematical relationships and to solve equations;</p> <p>f. function tables (input/output machines, T-tables) to model numerical and algebraic relationships;</p> <p>j. graphs using concrete objects, pictographs, frequency tables, bar graphs, line graphs, circle graphs, Venn diagrams, line plots, charts, tables, and single stem-and-leaf plots to organize and display data (4.1.K2, 4.2.K1-2)</p>	<p><i>FlyBy Math™ Activities</i></p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p>
<p><i>Fifth Grade Application Indicators</i> The student...</p> <p>1. recognizes that various mathematical models can be used to represent the same problem situation. Mathematical models include:</p> <p>a. process models (concrete objects, pictures, diagrams, number lines, hundred charts, measurement tools, multiplication arrays, division sets, or coordinate planes/grids) to model computational procedures and mathematical relationships and to solve equations;</p> <p>f. function tables (input/output machines, T-tables) to model numerical and algebraic relationships;</p> <p>k. graphs using concrete objects, pictographs, frequency tables, bar graphs, line graphs, circle graphs, Venn diagrams, line plots, charts, tables, and single stem-and-leaf plots to organize and display data (4.1.K2, 4.2.K1-2)</p>	<p><i>FlyBy Math™ Activities</i></p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p> <p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p>

2. selects a mathematical model and explains why some mathematical models are more useful than other mathematical models in certain situations.	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.
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Standard 3: Geometry

Geometry – The student uses geometric concepts and procedures in a variety of situations.

Benchmark 2: Measurement and Estimation – The student estimates, measures, and uses measurement formulas in a variety of situations.

<p><i>Fifth Grade Knowledge Base Indicators</i> The student...</p> <p>1. determines and uses whole number approximations (estimations) for length, width, weight, volume, temperature, time, perimeter, and area using standard and nonstandard units of measure (2.4.K1a)</p>	<p><i>FlyBy Math™ Activities</i></p> <p>--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.</p>
<p>2. selects, explains the selection of, and uses measurement tools, units of measure, and degree of accuracy appropriate for a given situation to measure length, width, weight, volume, temperature, time, perimeter, and area using (2.4.K1a) d. time including elapsed time.</p>	<p>--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.</p>
<p><i>Fifth Grade Application Indicators</i> The student...</p> <p>1. solves real-world problems by applying appropriate measurements and measurement formulas: a. length to the nearest eighth of an inch or to the nearest centimeter (2.4.A1a) d. time including elapsed time</p>	<p><i>FlyBy Math™ Activities</i></p> <p>--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.</p>
<p>3. estimates to check whether or not measurements or calculations for length, weight, temperature, time, perimeter, and area in real-world problems are reasonable</p>	<p>--Predict outcomes and explain results of mathematical models and experiments.</p>
<p>4. adjusts original measurement or estimation for length, width, weight, volume, temperature, time, and perimeter in real-world problems based on additional information (a frame of reference)</p>	<p>--Predict outcomes and explain results of mathematical models and experiments.</p>

Benchmark 4: Geometry From An Algebraic Perspective – The student relates geometric concepts to a number line and the first quadrant of a coordinate plane in a variety of situations.

<p>Fifth Grade Knowledge Base Indicators The student...</p> <p>1. locates and plots points on a number line (vertical/horizontal) using integers (positive and negative whole numbers) (2.4.K1a).</p>	<p>FlyBy Math™ Activities</p> <p>--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.</p>
<p>3. identifies and plots points as ordered pairs in the first quadrant of a coordinate plane (coordinate grid) (2.4.K1a).</p>	<p>--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.</p>
<p>4. organizes whole number data using a T-table and plots the ordered pairs in the first quadrant of a coordinate plane (coordinate grid) (2.4.K1a,f).</p>	<p>--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.</p>
<p>Fifth Grade Application Indicators The student...</p> <p>1. solves real-world problems that involve distance and location using coordinate planes (coordinate grids) and map grids with positive whole number and letter coordinates (2.4.A1a)</p>	<p>FlyBy Math™ Activities</p> <p>-Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.</p> <p>--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system.</p>
<p>2. solves real-world problems by plotting ordered pairs in the first quadrant of a coordinate plane (coordinate grid) (2.4.A1a)</p>	<p>-Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.</p> <p>--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.</p>

Standard 4: Data

Data – The student uses concepts and procedures of data analysis in a variety of situations.

Benchmark 2: Statistics – The student collects, organizes, displays, explains, and interprets numerical (rational numbers) and non-numerical data sets in a variety of situations with a special emphasis on measures of central tendency.

<p>Fifth Grade Knowledge Base Indicators The student...</p> <p>1. organizes, displays, and reads numerical (quantitative) and nonnumerical (qualitative) data in a clear, organized, and accurate manner including a title, labels, categories, and whole number and decimal intervals using these data displays:</p> <p>d. bar and line graphs, f. line plots, g. charts and tables</p>	<p>FlyBy Math™ Activities</p> <p>--Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs.</p>
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2. collects data using different techniques (observations, polls, tallying, interviews, surveys, or random sampling) and explains the results (2.4.K1j)	--Conduct simulation and measurement for several aircraft conflict problems.
<i>Fifth Grade Application Indicators</i> The student... 1. interprets and uses data to make reasonable inferences, predictions, and decisions, and to develop convincing arguments from these data displays (2.4.A1k): a. graphs using concrete materials d. bar and line graphs, f. line plots, g. charts and tables	<i>FlyBy Math™ Activities</i> --Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.
3. recognizes that the same data set can be displayed in various formats and discusses why a particular format may be more appropriate than another (2.4.A1k)	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.